

sible that its fine condition at present is due to a strong vitality stored up by a vigorous and fortunately located ancestry.

In addition to the many specimens from the vicinity of Midriver Island and the one specimen from Great Falls, the National Museum now contains a female specimen 68 mm. long from Cacapon River, Morgan County, West Virginia, one mile from its confluence with the Potomac, collected by J. O. Greene in November, 1924; and a male 103 mm. long, collected by a little girl in the Potomac River near Harper's Ferry, West Virginia, May 30, 1926, and presented to the Museum by Miss Harriet Bundick; a male 98 mm. long, and a left valve of another male, 105 mm. long, collected in the winter of 1926-27, by Marshall, Cooke and McNamara, in the Chesapeake and Ohio Canal, at Great Falls, Maryland. The canal has been out of use for several years but some mollusks are found in a little stream running along its bottom. When in use, the canal was fed at many points by water from the Potomac so that it was easy for the river fauna to find entrance to the canal.

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THE VARIATION OF MOLLUSCAN LIFE DURING  
PLEISTOCENE AND RECENT TIME

BY FRANK C. BAKER

Professor Shimek's paper "*Helicina* (*Hendersonia*) *occulta* Say, again" in the April NAUTILUS interests me greatly. While I do not feel competent at present to pass on the validity of *Hendersonia occulta rubella* Green as varietally distinct from *occulta*, there are certain remarks in Professor Shimek's paper which call for some comments from me. The statement that "there is no warrant for the separation of modern and fossil forms" indicates either that Professor Shimek has not compared the recent with the fossil forms carefully or else that he has made up his mind that there is no difference and wishes to "stand pat". The

statement that "to separate the living form as a named variety gives an impression of differences which do not exist" is without foundation of fact, as any one may see by comparing certain Pleistocene forms with the recent forms. During the evolution of the land and fresh water mollusks throughout the million years, more or less, of Pleistocene time, varieties have arisen which differ in some cases markedly from the recent form of the species. For example, among the land species, *Gonyodiscus macclintocki* is as different from *Gonyodiscus perspectiva* as two species can well be, yet the former is probably the ancestor of the latter. To call these two forms the same species is a contravention of the truth and renders classification valueless. *Succinea grosvenori* is so different from the Pleistocene variety which has been named *gelida* that it might be designated a species. *Vertigo loessensis* is quite different from *Vertigo gouldii*. Among the Polygyra group, *P. multilinata altonensis* is different from anything now living, as is also *P. multilinata wanlessi*, although that form resembles somewhat the *algonquinensis* of Nason.

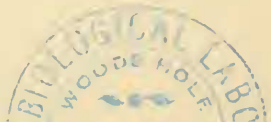
Among the aquatic forms, *Pomatiopsis scalaris* is uniformly different in several particulars from the recent *lapidaria*. Professor Shimek has stated in one place that "some authors are still publishing this species as a fresh water species when it is wholly a land species". I cannot believe that he has studied this species in the recent fauna for it is always an amphibious species, living in water in the spring and on wet, or even dry, ground in the fall and summer. So with the Pleistocene forms *Amnicola leightoni*, *A. gelida*, *Valvata lewisi precursor*, *Gyraulus altissimus*, and others, which are confined to the past and their exact counterparts are not known among the recent related forms.

In all classes of animals evolution has acted differently with various groups, accelerating in some species and genera, retarding in others, and we have in the Pleistocene certain species which have changed radically and others

which have remained unchanged throughout the entire period of glaciation. The mollusks show this difference in active evolution remarkably well and it is the height of absurdity to say that there has been *no* change in species during this long period when animal life was subjected to the most drastic climatic and environmental agencies. The remarkable fact is that so many species have come down with so little change. Another fact which has become increasingly evident is that at the close of the Wisconsin stage there was a great acceleration in evolution, due largely to the prevalence of lake conditions, and many species and varieties were evolved which do not occur in Pleistocene time.

The writer has been giving the life of the Pleistocene intensive study for the past fifteen years, in connection with the Illinois State Geological Survey, of which he is Pleistocene Invertebrate Paleontologist, and during this time a very large collection of the molluscan life of the various interglacial intervals has been collected. The new species and varieties found during this work have been diagnosed in the pages of THE NAUTILUS and the reader can easily formulate his own opinion concerning the validity of the supposed novel forms. Professor Shimek says "Manifestly there is no excuse whatever for a varietal separation of the fossil and modern forms where both exhibit the same range of variations". I quite agree with Professor Shimek in this statement and if he would without prejudice examine the various forms which the writer has diagnosed during the past few years he would agree, I am sure, that most of these, at least, represent recognizable variations which must bear names if we are to understand the action and reaction of evolutionary agencies during the period of the Pleistocene.

Molluscan students, as well as students of other branches of zoology, may be divided into the so called schools of "lumpers" and "splitters". The writer frankly chooses the latter in preference to the former, feeling that more is to



be learned from a comprehensive division of specific groups than from the throwing together of various types of varieties. I have no controversy with Professor Shimek on account of his opinion that Pleistocene and recent species do not differ, but I do object to the dogmatic manner of stating that his opinion represents the truth and that all those who differ with him in this respect are mistaken. I honor Professor Shimek for his great work in the study of Pleistocene faunas, especially the loess faunas, and we must all give him credit for having established beyond doubt the fact of the aeolian genesis of these interesting deposits.

I regret the necessity that calls forth this criticism but the remarks above cited cannot remain unchallenged.

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#### SHELL COLLECTING ON THE WEST MEXICAN COAST, II

BY H. N. LOWE

Before leaving Mazatlan, letters were secured to the Governor of the Tres Marias Islands, Mexico's penal colony, making a visit to that place possible.

Obtaining passage on a small cargo boat, the "Dos Hermanos," the trip was made in eighteen hours, landing at Balleto, the administration headquarters on Isl. Maria Madre.

This lies in the eastern, or lee side of the island and was rather poor for shore collecting. About six miles S. W. at another prison camp called Salinas where sea salt is evaporated in shallow cement basins, the sand beach gives way to flat shelving rocks and coral below low water. On these rocks were the finest specimens of the giant *Patella* I have ever seen, not eroded by heavy surf like so many are nor encrusted with foreign matter. Even the large specimens showed the fine sculpture.

A horseback trip was made to the north west end of the island, to the prison camp at Rio Hondo where I stayed